

**Quantitative Imaging of**

**ART 34 AMDT**

**Dielectric Permittivity and Tunability**

This application claims the benefit of provisional applications Nos. 60/153,354 filed Sep. 10, 1999 and 60/191,903, filed March 24, 2000.

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**Background of the Invention**

**Field of the Invention**

The present invention relates generally to imaging, and more particularly to measuring dielectric properties using a near-field scanning microwave microscope.

**Related Art**

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Dielectric thin film research has become increasingly important as the demand grows for smaller, faster, and more reliable electronics. For example, high permittivity thin films are under study in order to fabricate smaller capacitors while minimizing leakage. Low permittivity materials are being sought to allow smaller scale circuits while minimizing undesirable stray capacitance between wires. Nonlinear dielectrics, which have a dielectric permittivity which is a function of electric field, are being used in tunable devices, particularly at microwave frequencies. Finally, ferroelectric thin films are a solution for large-scale, non-volatile memories.

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